How to Conduct Monetary Policy amid Higher Inflation and a Nonbinding Zero (Effective) Lower Bound?

Policy Session 1

27th Annual Financial Markets Conference,
Federal Reserve Bank of Atlanta
Amelia Island, Florida

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May 15, 2023

ADVANCE READING COPY

HOW MONETARY POLICY GOT BEHIND THE CURVE—AND HOW TO GET BACK

EDITED BY

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HOW TO GET BACK ON TRACK

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14.24 ▼ 270.29 0.80% | **NASDAQ** 12025.33 ▼ 0.5% | **STOXX 600** 462.51 ▲ 0.3% | **10-YR. TREAS.** ▲ 10/32, yield 3.401% | **OIL** $68.60 ▼ $3.06 | **GOLD** $2,028.60 ▲ $14.30 | **EURO** $1.1065 | **YEN** 134.74

Vhat's News

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fficials signaled they might be fin-ising interest rates after unanimously ng another quar-t increase at their licy meeting. **A1**

ury yields fell and ks ended lower in of the meeting, S&P 500, Nasdaq losing 0.7%, 0.5% and nectively. B10, B11

Fed Boosts Rates to a 16-Year High

Central-bank officials signal they could be done tightening after 10th straight increase

By Nick Timiraos

WASHINGTON—Federal Reserve officials signaled they might be done raising interest rates for now after approving another increase at their meeting that concluded Wednesday.

"People did talk about pausing, but not so much at this meeting," Fed Chair Jerome Powell said at a news conference. "We feel like we're getting closer or maybe even there."

Wednesday's unanimous decision to lift rates by a quarter percentage point marked the Fed's 10th consecutive rate increase aimed at battling inflation. It will bring its benchmark federal-funds rate to a range between 5% and 5.25%, a 16-year high.

Stocks retreated after the decision after rising earlier in the day. The Dow Jones Industrial Average fell about 270 points, or 0.8%, while the S&P 500 and Nasdaq Composite indexed closed down 0.7% and 0.5%, respectively. U.S. government bonds rallied slightly, pushing the benchmark 10-year Treasury yield down to 3.401%, from 3.438% Tuesday.

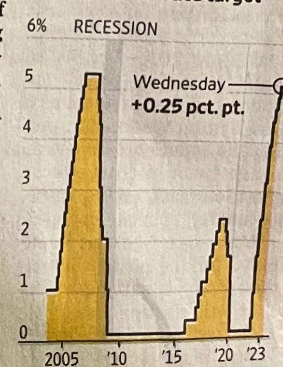
The Fed has now raised its benchmark federal-funds rate by a cumulative 5 percentage points from near zero in March 2022, the most rapid series of increases since the 1980s. The rate influences other rates throughout the economy, such as on mortgages, credit cards and business loans.

"I think that policy is tight," Mr. Powell said. But he said, "we are prepared to do more if greater monetary policy restraint is warranted."

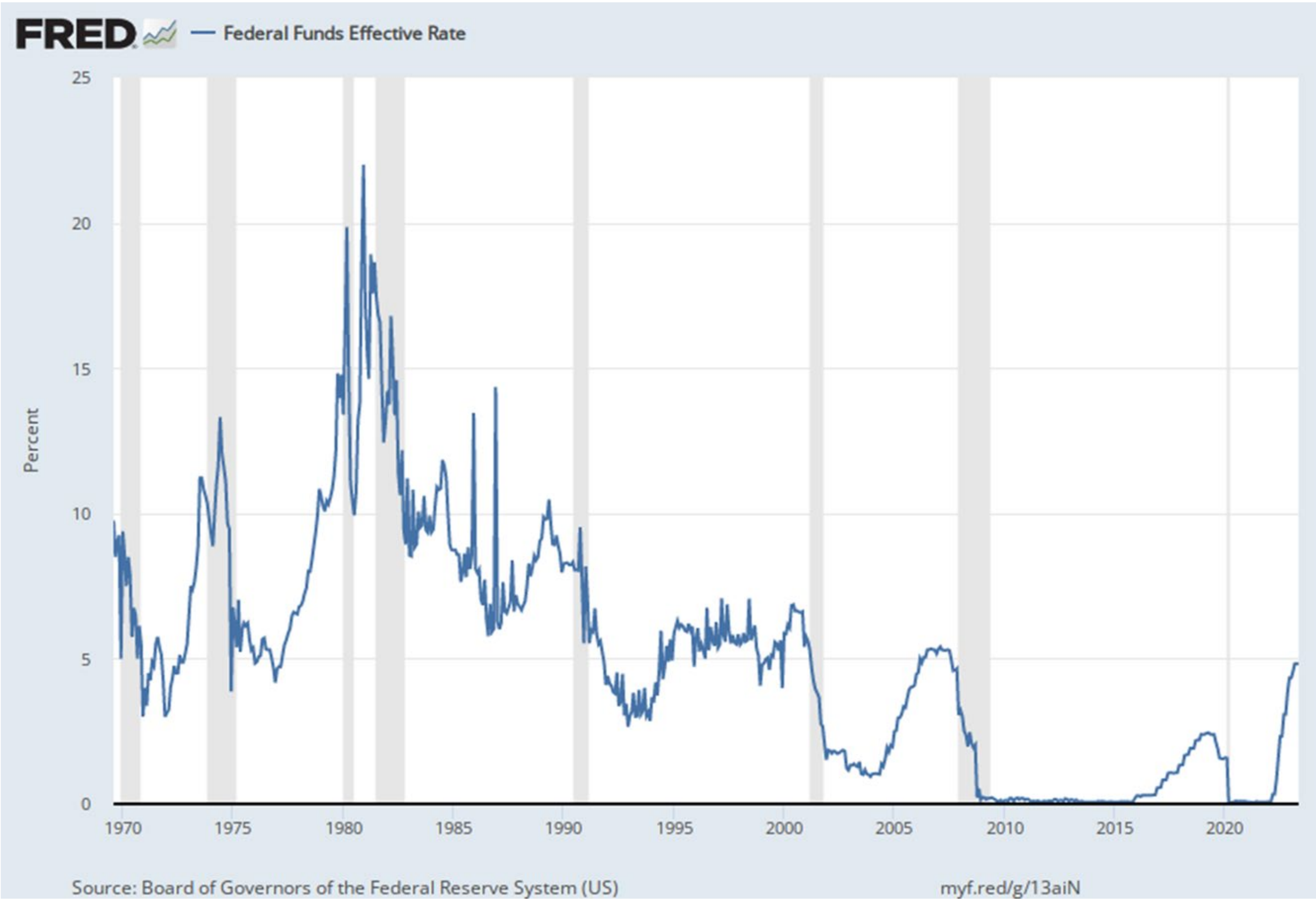
Until now, officials have been looking for clear signs of a slowdown to justify ending rate rises. But Mr. Powell indicated that calculation could shift now and that officials would need to see signs of stronger-than-expected growth, hiring and inflation to continue raising rates. The Fed's next meeting is June 13-14.

Please turn to page A2

Federal-funds rate target



Note: Chart shows midpoint of range since 2008.
Source: Federal Reserve


FRED
Federal Funds Effective Rate
Percent
25
20
15
10
5
0
1970
1975
1980
1985
1990
1995
2000
2005
2010
2015
2020
Source: Board of Governors of the Federal Reserve System (US)
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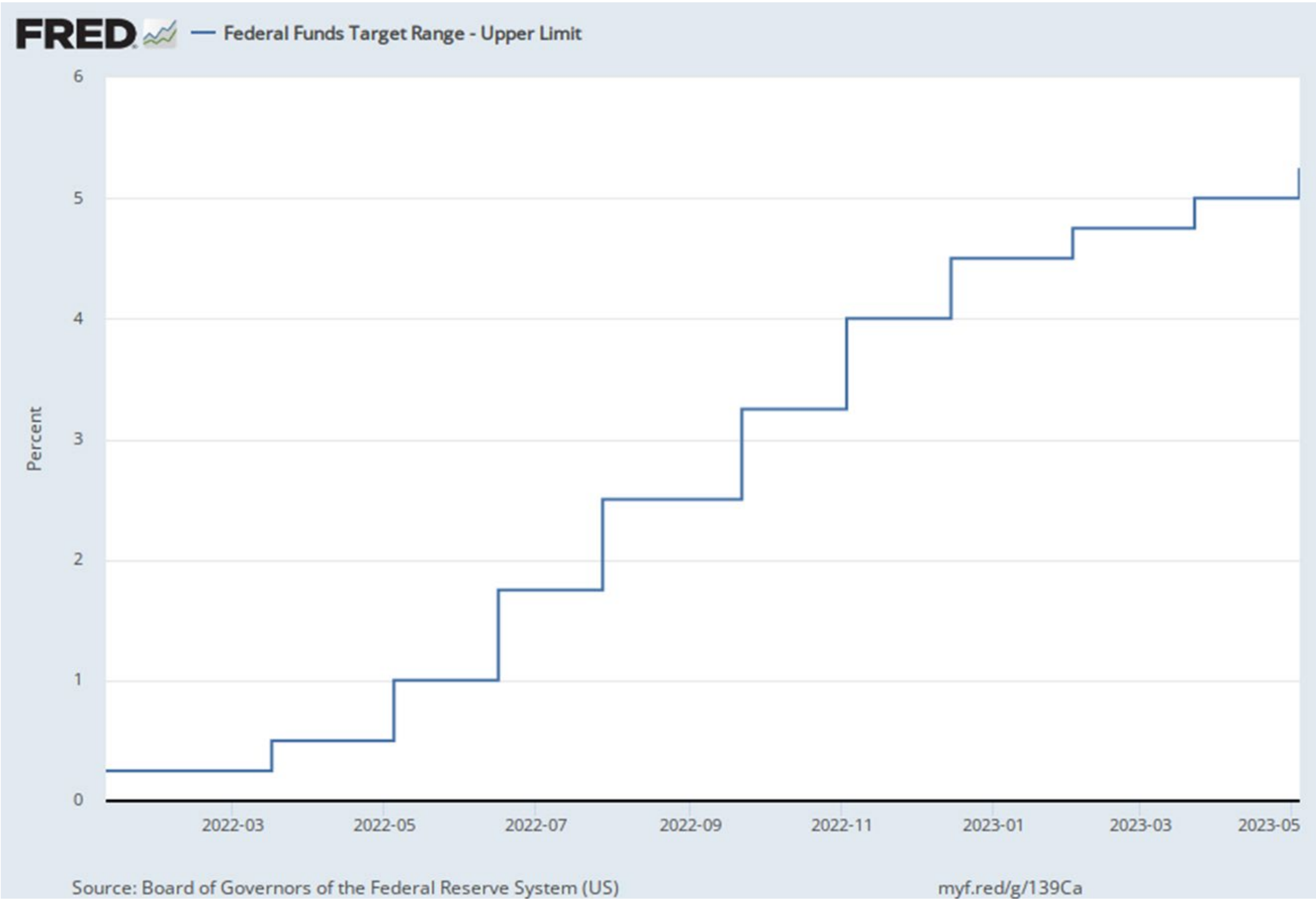
FRED
Federal Funds Target Range - Upper Limit
6
5
4
3
2
1
0
Percent
2022-03
2022-05
2022-07
2022-09
2022-11
2023-01
2023-03
2023-05
Source: Board of Governors of the Federal Reserve System (US)
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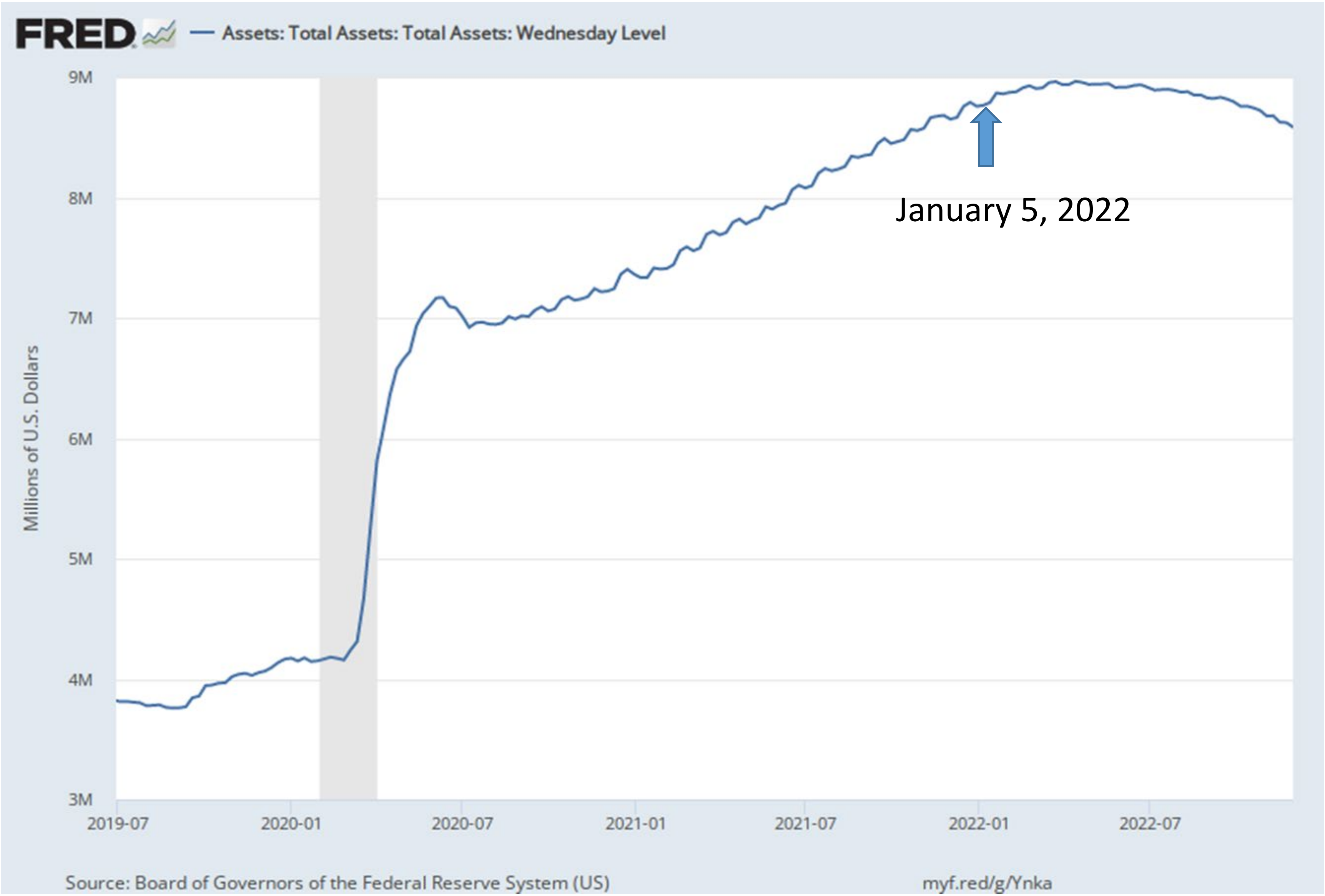
The Basic Story

- Move to monetary policy rules was proceeding, until pandemic hit:
  - Jay Powell, Fed Chair: “I find these rule prescriptions helpful”
  - Mario Draghi, President of the ECB: “we would all clearly benefit from…improving communication over our reaction functions…”
  - Raghu Rajan, Governor, Reserve Bank of India: “what we need are monetary rules,”
- Move was interrupted when pandemic hit in early 2020. Rules were out!
- But by Feb 2021, rules were back in Fed’s *Monetary Policy Report*
- But rules were out again in the Feb 25, 2022 *Report.*
- Jay Powell said on March 3 that rules would be back in
- And the *Monetary Policy Report,* released on June 17, 2022,

policy rules were back in, including the Taylor rule as number 1 on the list

- And many changes were seen in actual monetary policy
  - But a gap still exists between rule-based policy and policy actions
  - Other central banks
- Thus, we are still living in a high inflation era
- Events in Ukraine recently raised inflation, but not the basic story


FRED
Assets: Total Assets: Total Assets: Wednesday Level
9M
8M
7M
6M
5M
4M
3M
Millions of U.S. Dollars
2019-07
2020-01
2020-07
2021-01
2021-07
2022-01
2022-07
January 5, 2022
Source: Board of Governors of the Federal Reserve System (US)
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FRED
M2
23,000
22,000
21,000
20,000
19,000
18,000
17,000
16,000
15,000
14,000
Billions of Dollars
2019-07
2020-01
2020-07
2021-01
2021-07
2022-01
2022-07
January 3, 2022
Source: Board of Governors of the Federal Reserve System (US)
myf.red/g/YnnJ

A. Monetary policy rules

Taylor (1993) rule	$R_t^{T93} = r_t^{LR} + \pi_t + 0.5(\pi_t - \pi^{LR}) + (u_t^{LR} - u_t)$
Balanced-approach rule	$R_t^{BA} = r_t^{LR} + \pi_t + 0.5(\pi_t - \pi^{LR}) + 2(u_t^{LR} - u_t)$
Balanced-approach (shortfalls) rule	$R_t^{BAS} = r_t^{LR} + \pi_t + 0.5(\pi_t - \pi^{LR}) + 2min\{(u_t^{LR} - u_t), 0\}$
Adjusted Taylor (1993) rule	$R_t^{T93adj} = max\{R_t^{T93} - Z_t, \text{ELB}\}$
First-difference rule	$R_t^{FD} = R_{t-1} + 0.5(\pi_t - \pi^{LR}) + (u_t^{LR} - u_t) - (u_{t-4}^{LR} - u_{t-4})$

Note: R_t^{T93}, R_t^{BA}, R_t^{BAS}, R_t^{T93adj}, and R_t^{FD} represent the values of the nominal federal funds rate prescribed by the Taylor (1993), balanced-approach, balanced-approach (shortfalls), adjusted Taylor (1993), and first-difference rules, respectively.

R_{t-1} denotes the midpoint of the target range for the federal funds rate for quarter $t-1$, u_t is the unemployment rate in quarter t, and r_t^{LR} is the level of the neutral real federal funds rate in the longer run that is expected to be consistent with sustaining maximum employment and inflation at the FOMC's 2 percent longer-run objective, represented by π^{LR}. π_t denotes the realized four-quarter price inflation for quarter t. In addition, u_t^{LR} is the rate of unemployment expected in the longer run. Z_t is the cumulative sum of past deviations of the federal funds rate from the prescriptions of the Taylor (1993) rule when that rule prescribes setting the federal funds rate below an effective lower bound of 12.5 basis points.

The Taylor (1993) rule and other policy rules generally respond to the deviation of real output from its full capacity level. In these equations, the output gap has been replaced with the gap between the rate of unemployment in the longer run and its actual level (using a relationship known as Okun's law) to represent the rules in terms of the unemployment rate. The rules are implemented as responding to core PCE inflation rather than to headline PCE inflation because current and near-term core inflation rates tend to outperform headline inflation rates as predictors of the medium-term behavior of headline inflation.

$$r = p + .5y + .5(p - 2) + 2 \qquad (1)$$

where

r is the federal funds rate,
p is the rate of inflation over the previous four quarters
y is the percent deviation of real GDP from a target.

From "Discretion versus Policy Rules in Practice," Prepared for the November 1992 Carnegie-Rochester Conference on Public Policy, Carnegie Mellon University, Pittsburgh, Pennsylvania

Using this rule:
2+2= 4
1+2 = 3
1+ 3 + .5(3-2) = 4.5
1+4+ .5(4-2) = 6
Using the June 17, 2023, *Monetary Policy Report* "Taylor rule," and plug in:

- an inflation rate over the past four quarters of 4%,
- a target inflation rate of 2%,
- an equilibrium interest rate of 1%,
- a gap between GDP and its potential of about 0%,

you get a federal funds rate of 6%.

2021Q3

r = **4.575** + 1 + 0.5*(**4.575** - 2) + 0.5*(**-1.60**)

= **6**

r = 4 + 1 + 0.5*(4-2) + 0.5*(-2)

= **5**

Notes:

pi21a = (pi21 + pi21(-1) + pi21(-2) + pi21(-3))/4

= (5.9 + 6.2 + 4.3 + 1.9)/4 = **4.575**

gap = 100*(RGDP-POT)/POT = **-1.60**


FRED
Gross Domestic Product (chain-type price index)
Percent Change from Quarter One Year Ago
12.5
10.0
7.5
5.0
2.5
0.0
-2.5
1950
1960
1970
1980
1990
2000
2010
2020
Source: U.S. Bureau of Economic Analysis
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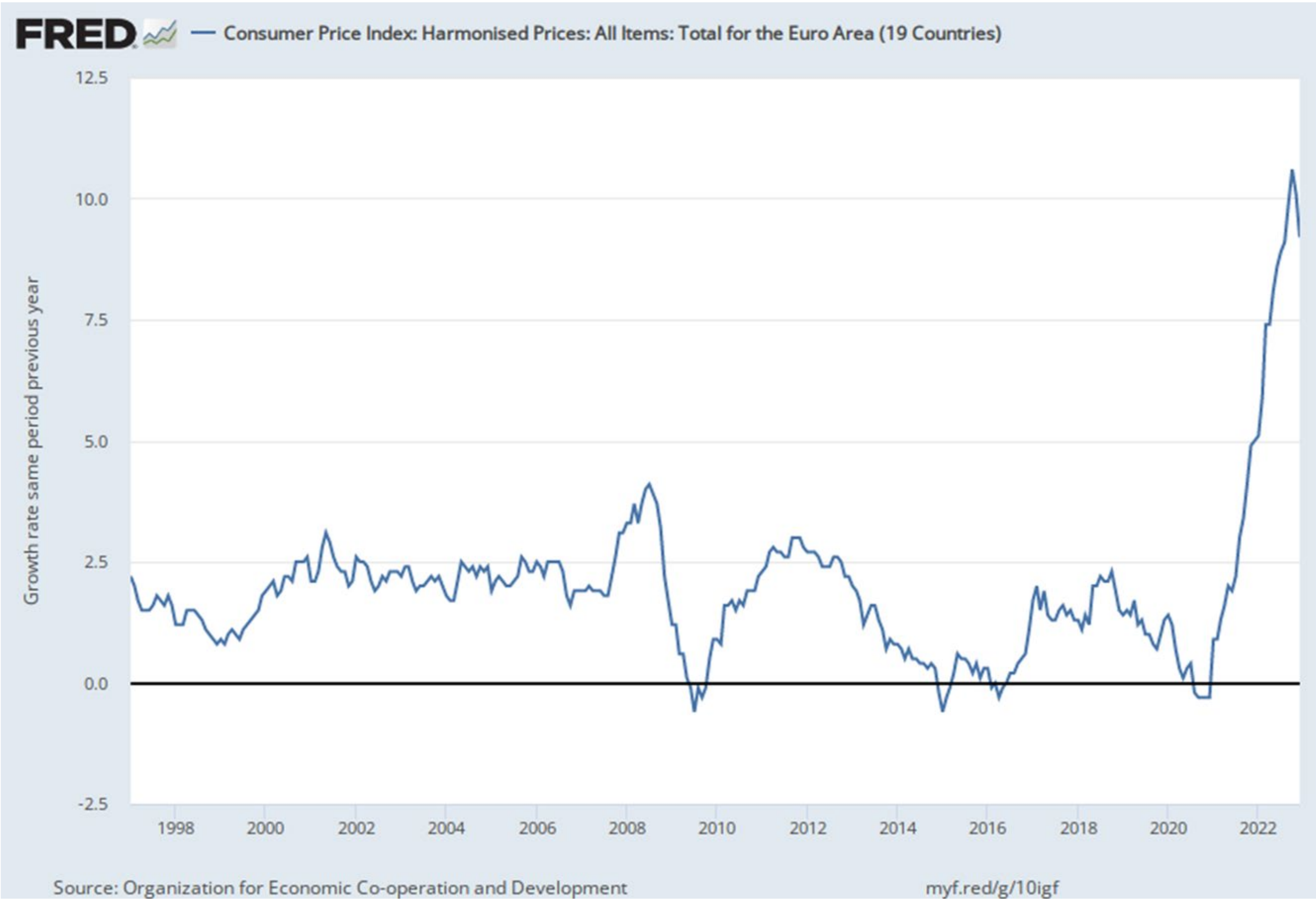
FRED
Consumer Price Index: Harmonised Prices: All Items: Total for the Euro Area (19 Countries)
Growth rate same period previous year
12.5
10.0
7.5
5.0
2.5
0.0
-2.5
1998
2000
2002
2004
2006
2008
2010
2012
2014
2016
2018
2020
2022
Source: Organization for Economic Co-operation and Development
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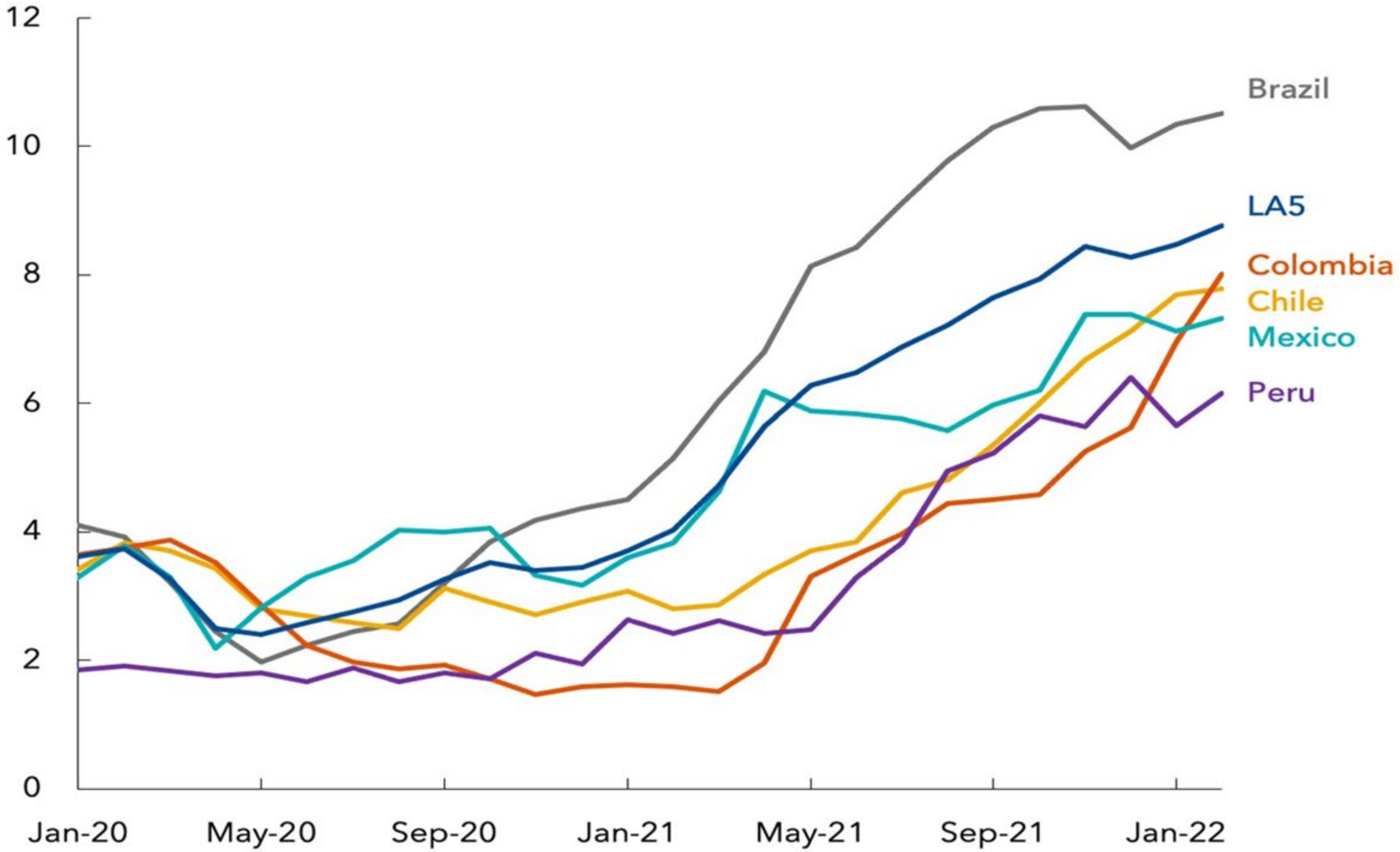
Broader based

Inflation in Latin America has become broader based since the second half of 2021.

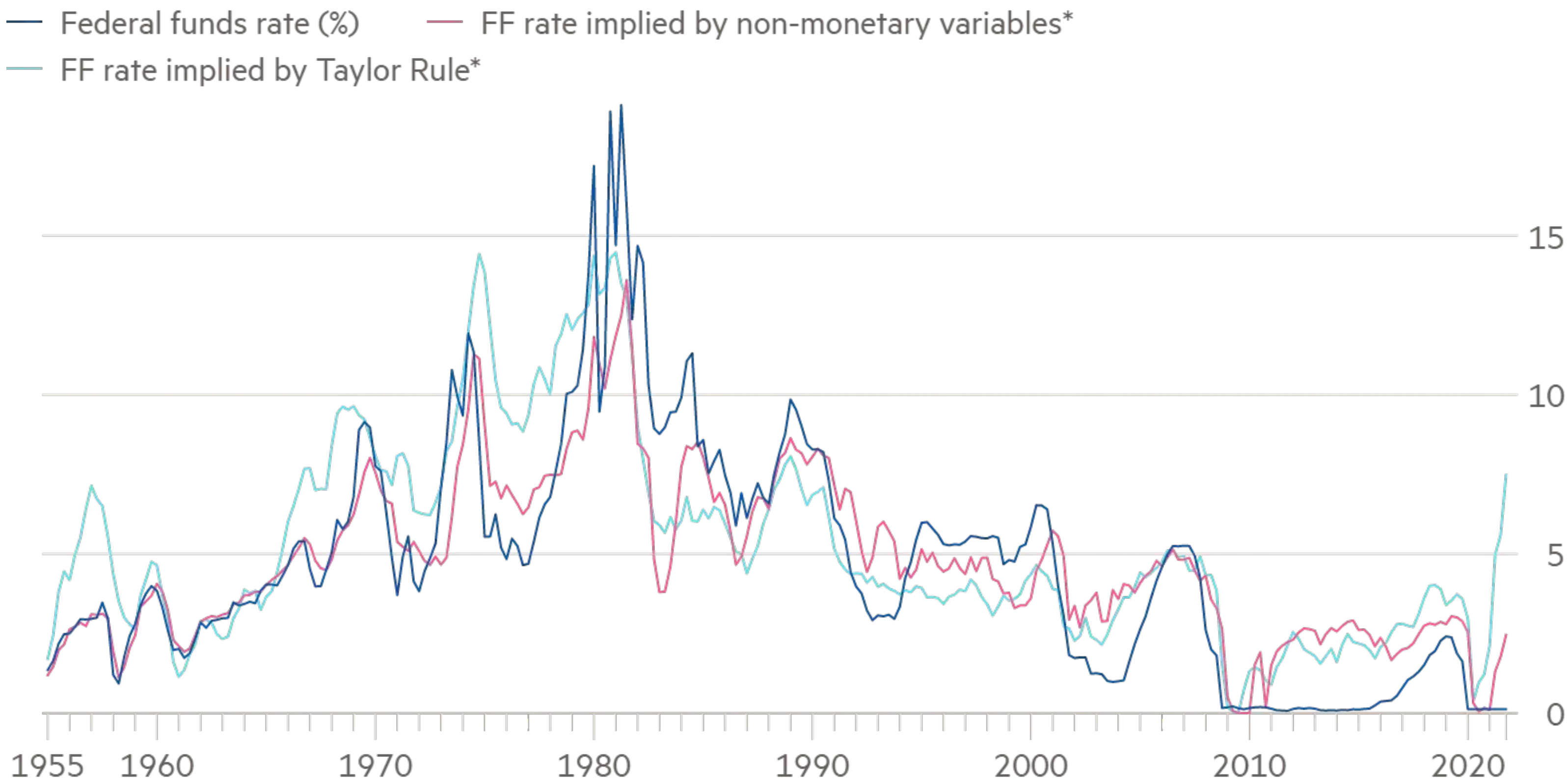
(year-over-year percent change)



Sources: Haver Analytics; national authorities; and IMF staff calculations.
Note: Peru refers to Lima.

IMF

Too low for too long



* Non-monetary variables include the output gap, and growth in real GDP, non-farm payroll employment, real retail sales, and core PCE inflation. Taylor Rule estimates based on output gap and core PCE inflation

Source: John P Hussman

See also “Overruling Mr. Taylor,” pp 10-11, **Grant’s Interest Rate Observer**, Vol. 40, No. 3, Feb. 18 2022

So, The Key Question:
Are We Entering a New Era of High Inflation?

- YES, unless policy makers maintain policy consistent with 2 percent inflation goal.
- More reasons now for central banks to be guided by a rules-based policy
- Here I outlined a method to do so.
  - Central banks should use rules that markets understand
  - The policy interest rate would increase if inflation rises
- It would of course be a contingency plan, as are all rules.
- Would greatly reduce chances of a large damaging change later.